



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

**BUREAU OF AIR MANAGEMENT
NEW SOURCE REVIEW PERMIT
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

Owner/Operator	PSEG Power Connecticut LLC
Address	Bridgeport Harbor Station, 1 Atlantic Street, Bridgeport, CT 06604-5513
Equipment Location	Bridgeport Harbor Station, 1 Atlantic Street, Bridgeport, CT 06604-5513
Equipment Description	Combustion Engineering Co. Steam Generator No. 3 with an In-Line Heater and Dense Pack Turbine
Town-Permit Numbers	015-0089
Premises Number	045
Stack Number	03
Prior Permit Issue Dates	May 10, 1985 (Original) February 7, 2007 (Minor Modification)
Minor Modification Issue Date	September 11, 2014
Expiration Date	None

/s/ Anne Gobin for
Robert J. Klee
Commissioner

September 11, 2014
Date

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

PART I. DESIGN SPECIFICATIONS

A. General Description

Steam Generator Unit No. 3 is a tangentially fired dual-fuel unit (low sulfur coal and residual oil) equipped with an in-line heater (No. 2 fuel oil fired) that removes excess moisture from coal prior to combustion.

B. Equipment Design Specifications

1. Fuel Types: Sub-Bituminous and Bituminous Coal; Residual Fuel Oil; or No. 2 Fuel Oil
2. Maximum Fuel Firing Rate(s) (MCF/hr, gal/hr): See Part II.A of this permit
3. Maximum Gross Heat Input (MMBTU/hr): 4,100

C. Control Equipment Design Specifications

1. Electrostatic Precipitator (ESP)
 - a. Number of Fields: 16; five in the direction of flow
 - b. Minimum Gas Flow Rate at Maximum Rated Capacity (acfm): 1,175,000
 - c. Design Removal Efficiency (%): 98
2. Fabric Filter
 - a. Make and Model: Custom
 - b. Air/Cloth Ratio: 4:1
 - c. Bag Material: Polyphenylene Sulfide or Equivalent Material
 - d. Cleaning Method: Pulse Jet
 - e. Pressure Drop (in H₂O): 6
 - f. Minimum Gas Flow Rate at Maximum Rated Capacity (scfm): 845,000 @ 68°F
 - g. Design Outlet Grain Loading (gr/dscf): 0.015
 - h. Design Removal Efficiency, Coal Burning for Mercury, in Conjunction with Carbon Injection (%): 90
3. Activated Carbon Injection System
 - a. Make and Model: Custom
 - b. Design Removal Efficiency, Coal Burning for Mercury, in Conjunction with Fabric Filter (%): 90
4. Dry Sorbent Injection System
 - a. Make and Model: Custom
 - b. Design Removal Efficiency, Coal Burning for Hydrogen Chloride, in Conjunction with Fabric Filter (%): 82

PART I. DESIGN SPECIFICATIONS, continued

D. Stack Parameters

1. Minimum Stack Height (ft): 498
2. Minimum Exhaust Gas Flow Rate Operating at Maximum Rated Capacity (acfm): 1,175,000
3. Minimum Stack Exit Temperature Operating at Maximum Load (°F): 260
4. Minimum Distance from Stack to Property Line (ft): 0

PART II. OPERATIONAL CONDITIONS

A. Fuel Type

1. Sub-Bituminous and Bituminous Coal
 - a. Maximum Fuel Consumption over any Consecutive 12 Month Period (tons): 2,014,800
 - b. Maximum Fuel Sulfur Content; percent by weight, dry basis (%): 1.0
 - c. Maximum Fuel Firing Rate: 230 tons/hr coal @ 400 MW net electrical output, daily average
2. Residual Fuel Oil
 - a. Maximum Fuel Consumption over any Consecutive 12 Month Period (gal): 241,048,920
 - b. Maximum Fuel Sulfur Content, percent by weight, dry basis (%): 1.0
 - c. Maximum Fuel Firing Rate: 27,517 gal/hr @ 410 MW net electrical output, daily average
3. No. 2 Fuel Oil (For Startup and In-Line Heater)
 - a. Maximum Fuel Sulfur Content; percent by weight, dry basis (%): 0.3
 - b. Maximum Fuel Firing Rate (gal/hr): 27,517

B. Control Equipment

1. ESP Minimum Efficiency for Operations without the Fabric Filter (%): 98
2. Fabric Filter and Activated Carbon Injection System (Applicable to Coal Burning Only)

The Permittee shall:

- a. Meet an emissions rate of equal to or less than 0.6 pounds of mercury per Tbtu; or
- b. Meet a mercury emissions rate equal to a 90% reduction of mercury from the measured inlet conditions; whichever emissions rate is more readily achievable, as determined by the Permittee.

[CGS §22a-199(b)(1), State Enforceable Only, Effective July 1, 2008]

PART II. OPERATIONAL CONDITIONS, continued

3. Fabric Filter and Dry Sorbent Injection System (Applicable to Coal Burning Only)

The Permittee shall meet a hydrogen chloride emissions rate of equal to or less than 0.002 lb/MMBtu or 0.02 lb/MWh. [Effective April 16, 2015]

4. Low NO_x Concentric Firing System

PART III. ALLOWABLE EMISSION LIMITS

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time as determined in accordance with the applicable averaging periods defined in the permit or as specified in an approved stack test protocol, except during periods of startup, shutdown and/or malfunction. Averaging times for NO_x shall include startup, shutdown and malfunction.

A. Criteria Pollutants

1. Sub-Bituminous and Bituminous Coal

Pollutant	lb/MMBtu	Note	Basis
TSP	0.06		f
SO _x	1.1		c, d
NO _x	0.38	Maximum 24-hr Daily Average	b
NO _x	0.15	October 1 st – April 30 th	b

2. Residual Fuel Oil

Pollutant	lb/MMBtu	Note	Basis
TSP	0.14		e
SO _x	1.1		a, c
NO _x	0.25	Maximum 24-hr Daily Average	b
NO _x	0.15	October 1 st – April 30 th	b

3. Basis

Demonstration of compliance with the above emissions limits shall be met by calculating the emissions rates using emissions factors from the following sources:

- a. AP-42 Section 1.3 (September 1998)
- b. NO_x RACT limit (RCSA §22a-174-22)
- c. Control of SO_x from Power Plants (RCSA §22a-174-19a)
- d. AP-42 Section 1.1 (September 1998)
- e. RCSA §22a-174-18
- f. BACT review, 1986 NSR Permit

PART III. ALLOWABLE EMISSION LIMITS, continued

4. SO_x emissions shall be no greater than 1.1 lb/MMBtu heat input on a 24 hour average and shall comply with the applicable calendar quarter average established by RCSA §22a-174-19a except as authorized in writing by the commissioner in accordance with RCSA §22a-174-19a, the Permittee shall comply with one of the following SO₂ standards:
 - a. the sulfur content of the fuel shall be equal to or less than 0.3% sulfur, by weight, dry basis;
 - b. the average SO₂ emission rate shall be equal to or less than 0.33 lb/MMBtu for each calendar quarter; or
 - c. the average emissions rate shall be equal to or less than 0.3 lb/MMBtu calculated for each calendar quarter, if the Permittee averages the emissions from two or more emissions units at the premises.

If the Permittee complies with b or c above, the sulfur content of the fuel shall not exceed 1.0% by weight, dry basis. The sulfur content of No. 2 fuel oil shall not exceed 0.3% by weight, dry basis.

5. The averaging times for the emission limitations with the use of the CEMs for SO_x shall be 24 hours, measured from midnight at the beginning of any day to midnight of the end of that day and shall include all periods of operation.
6. The averaging times for the emission limitations with the use of the CEMs for NO_x shall be 24 hours, measured from midnight at the beginning of any day to midnight of the end of that day and shall include all periods of operation, including startup, shutdown, and malfunction. [RCSA Section 22a-174-22(k)(4)(B)]
7. NO_x allowable emissions limit October 1st – April 30th: The averaging time for the emission limitation with the use of the CEMs for NO_x shall be October 1 to April 30, inclusive, and shall include all periods of operation, including startup, shutdown, and malfunction. [RCSA Section 22a-174-22(k)(4)(A)]
8. The permittee shall use data recorded by the CEMs and any other records and reports to determine compliance with NO_x and SO_x emissions.
9. The NO_x limits are NO_x RACT limits.
10. NO_x limit of 0.15 lb/MMBtu: RCSA §22a-174-22(e)(3) requires all NO_x Budget Program Sources to meet 0.15 lb/MMBtu from October 1st through April 30th annually. The Permittee may use NO_x DERCs as provided for in RCSA §22a-174-22(d)(2) to comply with this limitation.

B. Non-Criteria Pollutants (Applicable to Coal Burning Only)

1. Mercury Emissions Limits
 - a. Equal to or less than 0.6 pounds of mercury per TBtu or equal to a 90% reduction from the measured inlet conditions, whichever emissions rate is more readily achievable by the unit;
 - b. 0.0025 lb/hr; and
 - c. 21.76 lb/calendar year

PART III. ALLOWABLE EMISSION LIMITS, continued

Basis: Data analysis of coal from 1999 EPA Mercury Study

2. Reporting compliance with mercury emissions limits: The Permittee shall use an average of the CEM data recorded during the most recent calendar year if CEM for mercury is installed in accordance with Part IV.A.1 of this permit. [CGS §22a-199(b)(3)(B), State Enforceable Only]
3. A 90% reduction in mercury emissions is a compliance option pursuant to CGS §22a-199(b)(1). Compliance with 0.6 lb/TBtu limit shall be based on such state enforceable requirements in this permit. [State Enforceable Only]
4. The mercury emissions limit of 21.76 lb/calendar year is based on 8,760 hours per year of burning coal and a maximum heat input of 4,100 MMBtu/hr. Such limit shall include emissions during periods of startup, shutdown and malfunction.
5. Hydrogen Chloride Emissions Limits

Equal to or less than 0.002 lb/MMBtu or 0.02 lb/MWh [Effective April 16, 2015]

Basis: 40 CFR Part 63 Subpart UUUUU

C. Hazardous Air Pollutants

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA §22a-174-29. [State Only Requirement]

D. Opacity

1. This equipment shall not exceed 20% opacity during any six minute block average or 40% opacity during any one minute block average, except as provided in RCSA section 22a-174-18(j), as measured by 40 CFR Part 60, Appendix A, Reference Method 9.
2. The permittee shall use data recorded by the CEMs and any other records and reports to determine compliance with the opacity.

E. The Permittee shall use data recorded by the CEM and other records and reports to determine compliance with the opacity, NO_x and SO_x emissions.

F. The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS

A. Monitoring

1. Continuous Emissions Monitoring (CEM)
 - a. The Permittee shall comply with the CEM requirements as set forth in RCSA §22a-174-4. CEM shall be required for the following pollutant/operational parameters and enforced on the following basis:

Pollutant/Operational Parameter	Averaging Times	Emission Limit	Note
Opacity	6 minute block	20%	
Opacity	1 minute block	40%	
SO _x	24 hour average	See Part III of this permit	Calendar Quarter Basis
NO _x	24 hour daily	See Part III of this permit	Midnight to Midnight
Mercury	See Part IV.A.15 of this permit	See Part V of this permit	

- b. The Permittee shall properly install and operate CEM for mercury if the commissioner determines that CEM for mercury in flue gases are commercially available and can perform in accordance with National Institute of Technology Standards, or other methodology approved by the EPA.
2. The Permittee shall monitor monthly and annual fuel consumption.
3. The Permittee shall monitor the maximum daily average heat input rate by recording the net electrical output.
4. The Permittee shall operate and maintain the ESP and Fabric Filter at all times in order to comply with the particulate emissions limits in Part III of this permit and RCSA §22a-174-18.
5. The Permittee shall calibrate, maintain, operate, test and certify each CEM in accordance with DEEP Guidelines; applicable requirements specified in 40 CFR Part 60 Subpart A, Appendices B and F and any other applicable requirements.
6. The averaging times for the emissions limitations with the use of CEM shall include all periods of operation. For NO_x, such times shall include startup, shutdown and malfunction.
[RCSA §22a-174-22(k)(4)]
7. The Permittee shall use data recorded by the CEM and other records and reports to determine compliance with the opacity.
8. The Permittee shall perform inspections of the control devices as recommended by the manufacturer.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS, continued

B. Record Keeping

1. The Permittee shall keep records of monthly and annual fuel consumption, continuous emissions monitoring and operating hours. The Permittee shall make these records within 30 days of the end of the previous month or year, respectively.
2. The Permittee shall keep records of the fuel certification for each delivery of fuel oil from a bulk petroleum provider or a copy of the current contract with the fuel supplier supplying the fuel used by this equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. The shipping receipt or contract shall include the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel, by weight, dry basis, and the method used to determine the sulfur content of such fuel.
3. The Permittee shall keep records of monthly and 12 month CEM data. Such records produced by the CEM shall include all:
 - a. Charts;
 - b. Electronically stored data; and
 - c. Printed records.
4. The Permittee shall keep records on each required CEM. Such records shall include all:
 - a. Performance evaluations;
 - b. Calibration checks;
 - c. Adjustments;
 - d. Maintenance procedures; and
 - e. Data necessary to complete quarterly reports required by the commissioner.
5. The Permittee shall make and keep records of annual TSP emissions. The annual TSP emissions shall be calculated using emissions factors obtained from stack testing or from the latest version of AP-42 and the fuel usage for the calendar year. The Permittee shall make these calculations within 60 days of the end of the previous calendar year.
6. The Permittee shall keep procedures for calculating NO_x emissions.
7. The Permittee shall make and keep records of the daily average net electrical output.
8. The Permittee shall make and keep records of all tune-ups, repairs, replacement of parts and other maintenance done on the unit.
9. The Permittee shall keep records of all emissions testing done to comply with RCSA §22a-174-22. Such records shall include:
 - a. Dates and times;
 - b. Places;
 - c. Persons performing the measurements;
 - d. Testing methods used;
 - e. Operating conditions at the time of testing; and
 - f. The results of such testing.
10. The Permittee shall keep copies of all documents submitted to the commissioner pursuant to RCSA §22a-174-22.

PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS, continued

11. The Permittee shall keep reports of all monitoring and test data in accordance with RCSA §22a-174-4(c).
12. The Permittee shall keep records on the premises indicating continual compliance with this permit at all times.
13. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

C. Reporting

For coal burning, The Permittee shall, at the required frequency, report to the commissioner the results of any stack test or average of the CEM data, as applicable, used to demonstrate compliance with the provisions of this permit. Such reports shall be submitted on such forms as may be prescribed by the commissioner. [CGS §22a-199(b)(4)]

PART V. STACK EMISSION TEST REQUIREMENTS

- A.** Stack emission testing shall be performed in accordance with the [Emission Test Guidelines](#) available on the DEEP website.
- B.** Stack testing shall be required for Hg and HCl.
- C.** Recurrent stack testing for Hg shall be carried out once every calendar year.
- D.** Stack testing frequency for Hg shall revert back to a calendar quarter basis if any annual stack test demonstrates failure to comply with the Hg emissions rate set forth in Part III.B.1.a of this permit.
- E.** Recurrent stack testing for HCl shall be carried out once every calendar quarter if the operation in the calendar quarter exceeds 168 hours; effective April 16, 2015.
- F.** For coal burning, any stack test used to demonstrate compliance with a mercury emissions limit in this permit shall be:
 1. based on the average of the stack tests conducted during the two most recent stack tests;
 2. conducted at the required frequency in accordance with EPA Method 29 for the determination of metal emissions from stationary sources, as set forth in 40 CFR Part 60, Appendix A, or any other alternative method approved by EPA or DEEP; and
 3. conducted while combusting coal or coal blends that are representative of the coal or coal blends combusted during the applicable time period represented by such stack test.

[CGS §22a-199(b)(3)(A)]

- G.** The Permittee shall no longer be required to conduct stack testing for mercury on a quarterly basis if CEM for mercury is installed in accordance with Part IV.A.1 of this permit.

PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

- A.** The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.
- B.** The Permittee shall properly operate the control equipment at all times that this equipment is in operation and emitting air pollutants.
- C.** The Permittee shall implement a dust control plan concerning the handling, storage and processing of coal sufficient to cause compliance with RCSA §22a-174-18, Fugitive Dust, to be achieved at all times. Such plan may include, but is not limited to, such dust control measures and techniques as the use of:
 - a. Enclosures;
 - b. Vacuum enclosure collection systems and filters;
 - c. Specialized loading procedures and transport techniques;
 - d. Spray devices and surface applications; or
 - e. Any other methods necessary to assure compliance.

PART VII. SPECIAL REQUIREMENTS

- A.** The Permittee shall comply with all applicable sections of the following New Source Performance Standard(s) at all times.

Title 40 CFR Part 75

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- B.** The Permittee shall comply with all applicable sections of the following National Emission Standards for Hazardous Air Pollutants at all times.

Title 40 CFR Part 63 Subparts UUUUU and A

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

- C.** The Permittee shall comply with RCSA §22a-174-22 in accordance with the submitted and approved compliance plan and any applicable Trading Agreements and Order.
- D.** The commissioner shall have the right to make on-site, unscheduled inspection visits for the purpose of taking coal samples, examining and copying records, reports and other data, and determining whether the Permittee is operating Unit No. 3 in compliance with all applicable environmental requirements.
- E.** The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA §22a-174-23. [State Only Requirement]
- F.** The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA §§22a-69-1 through 22a-69-7.4. [State Only Requirement]

PART VIII. ADDITIONAL TERMS AND CONDITIONS

- A.** This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B.** Any representative of DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C.** This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D.** This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.
- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.

PART VIII. ADDITIONAL TERMS AND CONDITIONS, continued

- I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.